

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 3097
ILLINOIS CENTRAL RAILROAD COMPANY
REPORT IN RE ACCIDENT
NEAR CHAMPAIGN, ILL., ON.
APRIL 19, 1947

SUMMARY

Railroad: Illinois Central
Date: April 19, 1947
Location: Champaign, Ill.
Kind of accident: Derailment
Train involved: Passenger
Train number: 53
Engine number: Diesel-electric 4000
Consist: 7 cars
Estimated speed: 70 m. p. h.
Operation: Timetable, train orders and
automatic block-signal system;
interlocking
Tracks: Double; tangent; level
Weather: Partly cloudy
Time: 9:55 a. m.
Casualties: 2 killed; 108 injured
Cause: Train entering crossover at high
rate of speed, as result of
approach and home signals of
interlocking displaying false
proceed indications

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3097₊

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

ILLINOIS CENTRAL RAILROAD COMPANY

MAY 26, 1947

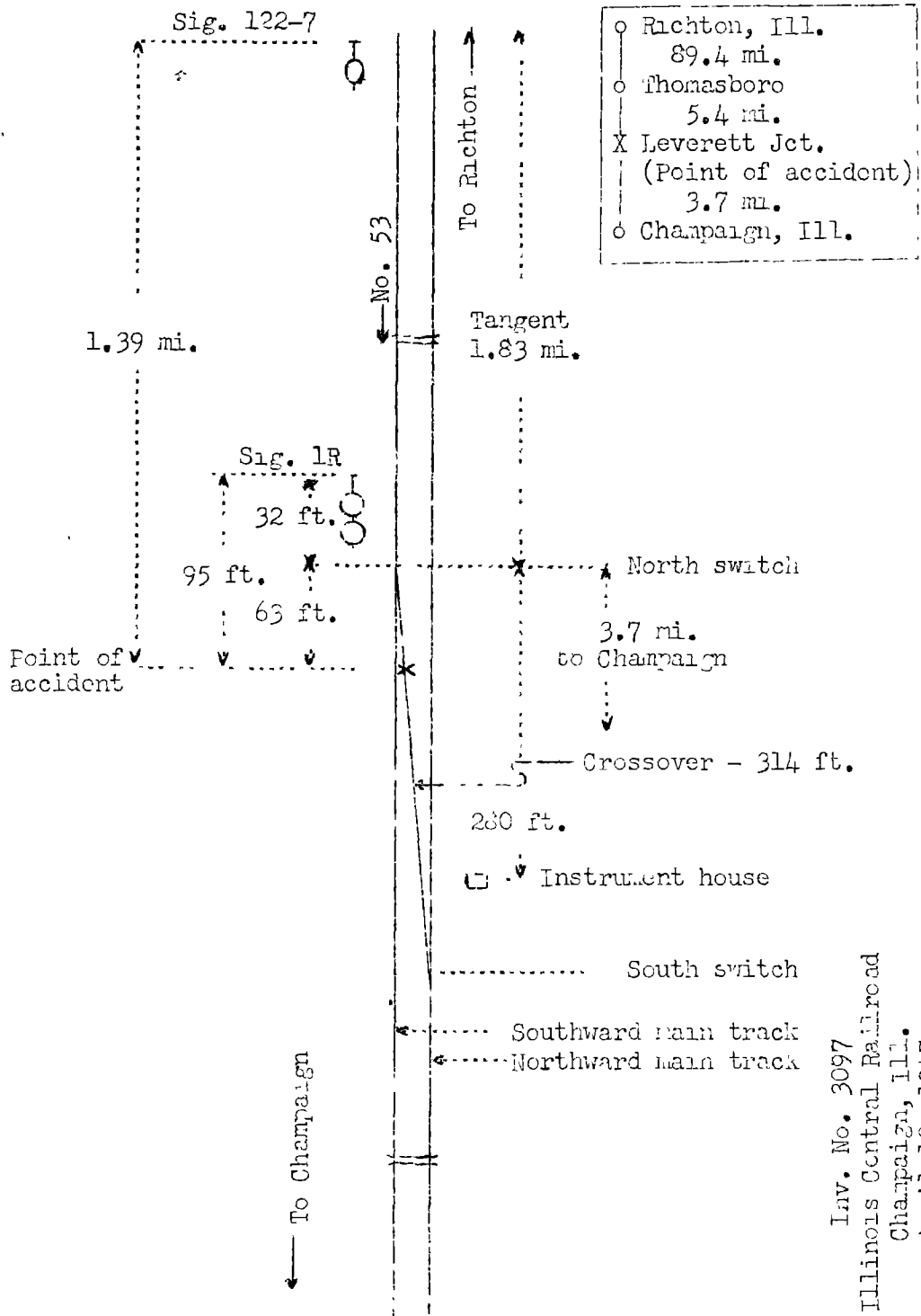
Accident near Champaign, Ill., on April 19, 1947, caused by a train entering a crossover at a high rate of speed, as a result of approach and home signals of an interlocking displaying false proceed indications.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On April 19, 1947, there was a derailment of a passenger train on the Illinois Central Railroad near Champaign, Ill., which resulted in the death of 2 train-service employees, and the injury of 95 passengers, 8 dining-car employees, 2 coach attendants and 3 train-service employees. This accident was investigated in conjunction with representatives of the Illinois Commerce Commission.

¹Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Inv. No. 3097
Illinois Central Railroad
Champaign, Ill.
April 19, 1947

Location of Accident and Method of Operation

This accident occurred on that part of the Illinois Division extending between Richton and Champaign, Ill., 98.5 miles, a double-track line in the vicinity of the point of accident, over which trains moving with the current of traffic are operated by timetable, train orders and an automatic block-signal system. Within interlocking limits at Leverett Jct., 94.8 miles south of Richton, a facing-point crossover 314 feet long connects the southward and the northward main tracks. The north switch of this crossover is 3.7 miles north of the station at Champaign. The derailment occurred on the turnout of the north crossover-switch, at a point 63 feet south of the switch. The main tracks are tangent throughout a distance of 1.83 miles immediately north of the north crossover switch and a considerable distance southward. The grade is practically level.

The structure of the crossover consists of No. 15 turnouts, rigid-type frogs 23 feet 7 inches in length, 131-pound switch-points and rail sections, and 13-foot guard rails. The curvature of each turnout is $3^{\circ}09'33''$, and the angle of each frog is $3^{\circ}49'06''$. The crossover is laid on about 190 switch ties. No superelevation is provided. The distance between the centerlines of the main tracks is 15 feet. The track is ballasted with crushed rock to a depth of 12 inches.

Approach signal 122-7 and home signal 1R, governing south-bound movements on the southward main track, are, respectively, 1.39 miles and 95 feet north of the point of derailment. These signals are of the color-light type, and are continuously lighted. The involved aspects and corresponding indications and names are as follows:

<u>Signal</u>	<u>Aspect</u>	<u>Indication</u>	<u>Name</u>
122-7	Green	Proceed.	Clear.
1R	Green over red	Proceed.	Clear.

The interlocking at Leverett Jct. is controlled by an interlocking machine, located in the yard office at Champaign. The machine has four working levers. Electric time, indication and route locking are provided. An illuminated track diagram is provided and is so arranged that a red light is displayed to indicate track occupancy, and a flashing yellow light is displayed when the route is lined for movement through the crossover. In addition, if the lever in control of the crossover switches is in position for the switches to be lined normally and either switch is not in normal position, a

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continuous yellow light is displayed on the track diagram. Under normal conditions, if either crossover switch is in other than normal position restrictive indications are displayed by signals 122-7 and 1R.

Rules governing the signal department read in part as follows:

419. * * * Under no circumstances must anything be done that will hold signals in proceed position.

421. * * * When any work is to be done on an interlocking plant which may affect the safe operation of trains, an understanding must be reached with the signalmen on duty to insure safe operation. The signalmen on duty must be notified when the work is completed. The work must not be left until the apparatus has been operated and is known to be in safe working condition and it must be known that the relative positions of the function and its controlling lever correspond.

422. * * * All apparatus and electrical circuits when installed new, changed, or rearranged, shall be tested and adjusted to insure operation in conformity with plans and instructions.

The maximum authorized speed for the train involved was 100 miles per hour. The maximum authorized speed for all trains through the crossover involved was 25 miles per hour.

Description of Accident

No. 53, a south-bound first-class passenger train, consisted of Diesel-electric engine 4000, a single-unit type, one baggage-dormitory car, two coaches, one dining car, two coaches and one lounge-tavern-observation car, in the order named. All cars were of light-weight all-steel construction. This train passed Thomasboro, the last open office, 5.4 miles north of Leverett Jct., at 9:50 a. m., on time, passed signals 122-7 and 1R, which displayed proceed, and while moving on the southward main track at an estimated speed of 70 miles per hour it entered the crossover at Leverett Jct. at the north switch, which was lined for entry to the crossover, and was derailed.

The engine stopped practically upright, across the main tracks and at an angle of about 60 degrees to them, with the front end 978 feet south of the north crossover switch. The first car stopped on its left side, across the southward

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main track and at an angle of about 75 degrees to it, with the roof against the side of the engine. The second to seventh cars, inclusive, stopped practically upright and in various positions across the main tracks and in line with them. The engine and the first car were badly damaged, and the remainder of the equipment was considerably damaged.

The conductor and the baggageman were killed. The engineer, the fireman and the flagman were injured.

It was partly cloudy at the time of the accident, which occurred about 9:55 a. m.

Diesel-electric engine 4000 is provided with an MS-40 brake valve. This engine and the cars of No. 53 are provided with D-22-DR control valves. The brake equipment is arranged for either automatic or electro-pneumatic operation. During the trip involved the electro-pneumatic feature was in service. The equipment is so arranged that during an emergency application of the brakes power is automatically cut off from the propelling mechanism, and sand is automatically deposited upon the rails from sanders on the engine and the cars. The equipment of this train is provided with tight-lock couplers.

Discussion

As No. 53 was approaching Leverett Jct. the speed was about 90 miles per hour, in territory where the maximum authorized speed for this train was 100 miles per hour. The enginemen were maintaining a lookout ahead from the control compartment at the front end of the Diesel-electric engine. Signals 122-7 and 1R displayed proceed, and the enginemen called the indications. When the engine was about 300 feet north of the north crossover-switch, which is 32 feet south of signal 1R, the enginemen observed that the north switch was in position for entry to the crossover and that the south switch was in normal position. Then the engineer moved the brake valve to emergency position. When the derailment occurred the speed was about 70 miles per hour. The maximum safe speed and the overturning speed for the engine involved moving on this crossover are, respectively, 40 miles per hour and 73 miles per hour.

The investigation disclosed that during a period of about 2 hours 40 minutes immediately prior to the accident a signal maintainer and a signal testman were engaged in replacing the switch-control-lever repeating-relay and the switch repeating-relay in the circuit of the north crossover switch of the interlocking at Leverett Jct. These relays were in an instrument house located about 280 feet south of the north crossover

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switch. After the relays were replaced the maintainer called the operator at Champaign by telephone and instructed him to place the lever in control of the crossover switches in position for the switches to be lined normally. At that time the lever was in position for the crossover switches to be lined normally, but the yellow indicator-lamp on the track-diagram panel of the control machine was illuminated. This indicated that the crossover switches were not in correspondence with the control lever, and the operator so informed the maintainer. Then the signalmen observed that the polar contacts of the switch repeating-relay were in reverse position, which condition indicated that the north switch was lined for entry to the crossover. The signalmen erroneously thought that this condition was the result of their having made incorrect connections to the coil terminals of this relay, and they transposed the coil wire connections. After this change was made, the polar contacts were in normal position and the control-panel indicated that the positions of the crossover switches were in correspondence with the position of the control lever, and the signalmen thought the north crossover switch also was in normal position. After completing further tests, the signalmen proceeded to the yard office at Champaign to test the interlocking machine. Before leaving the vicinity of the crossover, they did not examine the north crossover switch to determine whether this switch was in the position corresponding with the position of the control lever of the interlocking machine, and they did not look at signal 1R to determine if this signal was displaying a proper indication. The last test of the interlocking machine was conducted by the signalmen about 5 minutes prior to the time the accident occurred, and they observed no unusual condition.

In tests after the accident it was found that an error had been made in making the connections to the switch-control-lever repeating-relay. As a result of this condition, together with the transposing of the connections of the switch repeating-relay, the north crossover switch was in position for entry to the crossover when the lever in control of this switch was in normal position, and false proceed indications were displayed by signals 122-7 and 1R for No. 53.

Cause

It is found that this accident was caused by a train entering a crossover at a high rate of speed, as a result of approach and home signals of an interlocking displaying false proceed indications.

Dated at Washington, D. C., this twenty-sixth day of May, 1947.

By the Commission, Commissioner Patterson,

(SEAL)

W. P. Bartel,
Secretary.